ISSN: 2321-8819 (Online) 2348-7186 (Print) Impact Factor: 1.498 Vol. 5, Issue 6, June 2017

The Role of Nurses during Medicating Pregnant Women with Chronic Pain: A Study of Pakistan

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ABSTRACT : Every patient has a right to be treated with dignity, respect and high quality pain management (Olivier, et al., 2012). Pain continues to be inadequately treated by healthcare providers (Zuccaro, et al., 2012). The purpose of this DNP project was to determine if perinatal nurses' intent to medicate pregnant women with chronic pain was affected by knowledge of pain, attitude, or demographics. This will explore the theoretical application of Ajzen's theory of planned behavior which suggests that attitude correlates with intention to act. A quantitative, cross-sectional correlation study used a pencil and paper survey to measure knowledge about pain, attitudes, and intent to medicate pregnant women with chronic pain. One hundred perinatal nurses who worked in labour and delivery, mother baby, or the neonatal intensive care unit from four hospitals in northern New Jersey participated in the study. Each hospital provided a different level of perinatal care from community basic, to intermediate, intensive, and regional perinatal centre. Increased levels of education positively impact perinatal nurses' knowledge of pain, attitude, and intent to medicate pregnant women with chronic pain. The perinatal nurse's intent to medicate was not statistically correlated to age, years of nursing experience, or level of perinatal care. The perinatal nurse's intent to medicate a pregnant woman with chronic pain is positively correlated to increased knowledge of pain ($r(100) = 0.463$, $p < 0.001$). Attitude scores were positively correlated with an increased intent to medicate a pregnant woman with chronic pain ($r(100) = 0.583$, $p < 0.001$).

KEYWORDS: chronic pain, pregnant women, nurses, knowledge of pain, attitude, intent to medicate

INTRODUCTION: Every patient with pain has the right to be treated with dignity, respect, and high quality pain management (Olivier, et al., 2012). The nursing profession is dedicated to the provision of comfort and alleviation of suffering (Todd, et al., 2007). The American Pain Society (2010) supports efforts to improve pain management for patients in all healthcare settings. The Joint Commission implemented standards in 2000 requiring healthcare professionals to recognize the right of patients to have appropriate assessment and management of pain. All patients must be screened for pain on admission and re-assessed as clinically required throughout the hospital stay.

Five million reproductive age women in the United States reported experiencing pain in 2008 (Soni, 2011). Chronic pain can result from arthritis, cancer, headache, low back pain, renal pain, andinterstitial cystitis (National Institutes of Health, 2015). Forty- two percent of female veterans 18 – 45 years of age were prescribed opioids for pain in 2010 with ten percent of pregnant veterans receiving opioid prescriptions (Kroll-Desrosiers, Skanderson, Bastian, Brandt, Haskell, Kerns, & Mattock, 2015). Retrospective cohort studies have found that 14.4% - 29.9% of pregnant women are issued opioid prescriptions during pregnancy for pain (Ailes, et al., 2015; Epstein, et al., 2013). Kellogg, Rose, Harms, and Watson (2011) identified that 0.6% of women used chronic prescription opioids for greater than one month in pregnancy for pain. Stanhope, Gill and Rose (2013) note that pregnant women with a history of chronic opioid use in pregnancy will require higher doses of analgesics for pain management during hospitalization, labor and after delivery.

Pregnant women are often denied adequate pain management because the care giver's belief system says that the pregnant woman's pain is not as important as the potential harm to the fetus (Vermani, Mittal, & Weeks, 2009; Lupton, 2011; Lupton, 2012). Chronic opioid use in pregnancy is associated with birth defects such as spinal cord defects and cardiac defects (Broussard et al., 2011) and new-born withdrawal also known as Neonatal Abstinence Syndrome (Kellogg et al., 2011).

Ajzen's Theory of Planned Behavior (1991) was the framework for this project. The theory of planned behavior is an extension of the theory of reasoned action developed by Ajzen and Fishbein in 1975 (Ajzen, 1991). The theory of planned behavior is designed to predict and explain human behavior. This theory states that the intention to act can be predicted by a person's attitude toward the behavior, normative beliefs or perceived social pressure to act in a certain way, and the person's perception of control over a situation (Ajzen, 1991). The theory of planned behavior is built on the idea that the behaviors that an individual performs can be predicted from a person's intention to perform the behavior (Perkins, et al.,

2007). Behavioral intentions are thought to be good predictors of future behavior (Perkins et al., 2007).

Positive attitudes are formed toward behaviours that are associated with desirable consequences. Unfavourable attitudes are formed toward behaviours associated with undesirable consequences. The subjective attitude is in direct proportion to the strength of the belief so that the stronger the belief, the stronger the attitude will be whether positive or negative (Ajzen, 1991). A positive attitude is strongly correlated to action. For example, a positive attitude toward the patient is more likely to result in a nurse medicating that patient for pain.

Several researchers who have used Ajzen's theory of planned behavior as the theoretical basis of research have found attitude to play a significant role in intention to act. Studies by Limbert, & Lamb (2002) have found that attitude is the strongest predictor of intention to act (Perkins et al., 2007). Across sectional study by Edwards and colleagues (2001) found that nurse attitude was more strongly related to intent to administer pain medication than subjective norm and direct control. Wolff's 2011 study found that attitude measure was superior to behavioural beliefs as a predictor of intentions (Ajzen, 2011). Kinket found that social norms and behavioural control did not increase the predictive power of planned behavior (Perkins et al, 2007).

LITERATURE REVIEW: A literature search was conducted using the Cumulative Nursing and Allied Health Literature (CINAHL), Cheng Find, Google Scholar, Cochrane Library, and Science Direct data bases. The search was limited to 2011 to 2016. Key words included nurse attitudes, chronic pain, and chronic pain in pregnancy, analgesics, opioids, and pain management. In order to identify literature about nurse attitudes toward pregnant women receiving opioids in pregnancy, inclusion criteria included pain management in patients with substance abuse, pain management in pregnancy, nurse attitudes toward pain management in pregnancy, nurse attitudes toward pain management in patients with substance abuse. While there was no literature on nurse attitudes toward chronic pain in pregnancy, several themes were identified related to the topic. These included prevalence of chronic pain, prevalence of opioid use in pregnancy, healthcare provider attitudes toward pregnant women with a history of substance abuse, healthcare provider attitudes toward pregnant patients with a history of substance abuse, management of chronic pain in pregnant women, and societal attitudes toward pregnant women. Each of these themes was explored.

Prevalence of Chronic Pain

The Institute of Medicine revealed in its 2011 report Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education and Research that over 100 million adults in the United States suffer from significant and chronic pain. The care and treatment of this pain costs in excess of $635 billion dollars annually (Gaskin and Richard, 2012). Pain is responsible for 14% of Medicare/ Medicaid expenditures. Zuccaro, et al. (2012) state that 61% of the United States population report experiencing chronic or recurrent pain. Chronic pain can be nociceptive, neuropathic or mixed. Chronic pain can lead to pathologic changes in the nervous system that cause an increased sensitivity to pain and a reduced response to analgesics (Zuccaro et al., 2012).

Prevalence of Opioid use During Pregnancy

Kellogg, Rose, Harms, and Watson (2011) conducted a retrospective cohort study of 26,314 deliveries between 1998 and 2009. Kellogg et al. (2011) identified that 0.6% of women used chronic prescription opioids for greater than one month in pregnancy primarily for chronic pain from headaches, genitourinary pathology, and orthopedic problems. A retrospective cohort study of 2,331 women veterans identified that 10% of pregnant female veterans received prescription opioids during pregnancy for back problems, joint pain, and associated mental health conditions (Kroll-Desrosiers, et al., 2015). A prospective cohort study of2, 748 pregnant women looking at clinical conditions associated with opioid analgesic use in pregnancy (Smith, Costello, and Yonkers, 2015) found that 6% of pregnant women reported illicit substance use. Several co-morbid mental health conditions were found in this population. Major depression was reported in 16% of the opioid users compared to only 8% in the non-users. Generalized anxiety disorder was present in 18% of the opioid users versus 9% of non-users. Eleven percent of opioid users suffered from post-traumatic stress disorder compared to 4% of non-users. One fifth of the opioid using pregnant women had a chronic medical condition versus 7.8% of non-opioid using women. Another retrospective cohort study of 277,555 pregnancies covered by Tennessee Medicaid between 1995 and 2009 looked at the prevalence of opioid analgesics dispensed during pregnancy (Epstein, et al., 2013).

Healthcare Provider Attitudes toward Patients with a History of Substance Abuse

Health care professionals have been found to have negative attitudes toward patients with substance use disorders in all areas of medical care. Morgan (2014) conducted a qualitative study of nurses that looked at nurse attitudes toward patients with substance use disorders. A common theme among the nurses was that the nurse worried that she would encourage addiction and did not want to give pain medication. Another common theme was that patients with substance use disorders were very demanding, and very suspicious. For example, it was reported that one nurse would leave the floor when a patient with substance use issues requested pain medication to delay the administration. Van Boekel, Brouwers, Van Weeghel, and Garretsen (2013) conducted a systematic review of health professionals' attitudes toward patients with substance use disorders. This review of 28 studies between January, 2000 and November, 2011 identified that health professionals were generally found to have negative attitudes toward illicit drug users. Health professionals were found to stigmatize substance use disorder more than patients with mental illness. Krokmyrdal and Andenaes (2015) conducted a cross sectional study of 98 nurses. The majority of these nurses expressed negative attitudes toward patients with substance use histories. Attitudes included feeling that this population of patients exaggerate pain to get medication (61.7%), demand additional medications (87.8%), and are not honest about their pain (56.1%) (Krokmyrdal, et al., 2015). These authors concluded that negative attitudes toward patients with substance use disorders were common among health professionals and contributed to suboptimal care for these patients.

Management of Chronic Pain in Pregnancy

A review article by Shah et al. (2015) discussed pain management options in pregnancy. Suggested pain management techniques included prevention of pain through exercise, positioning and physical therapy. If these techniques were not effective to prevent or manage pain, non-pharmacologic complementary and alternative treatments such as acupuncture, manipulation, and transcutaneous nerve stimulation were suggested. Acetaminophen was suggested as the drug of choice for severe pain (Shah et al., 2015). Non-steroidal anti-inflammatory agents such as ibuprofen and naproxen have been associated with premature closure of the fetal ductusarteriosis and vasoconstriction of maternal uterine arteries (Shah et al., 2015). For this reason, the uses of non-steroidal anti-inflammatory medications are contraindicated for chronic pain management during pregnancy.

There was no discussion of pain management in this study. Elden, Lundgren and Robertson also conducted a qualitative study of 27 women experiencing chronic pain in pregnancy. This study found that 20 – 23% of pregnant women had to take sick leave during pregnancy due to chronic pain. Themes identified in this study included the impact of pain on social life, partner relationships, inability to cope with activities of daily life and motherhood (Elden, Lundgren and Robertson, 2013). Chronic pain in pregnancy had a dramatic effect on the lives of these study participants. Again, there was no discussion of pain management in this study.

METHODOLOGY: The purpose of this Doctor of Nursing Practice (DNP) project was to investigate whether perinatal nurses' intent to medicate pregnant women with chronic pain is affected by knowledge of pain and the attitudes of perinatal nurses toward patients with chronic pain who are pregnant. This was a quantitative, cross-sectional correlation study that used a pencil and paper survey to measure attitudes, knowledge about pain, and intent to administer pain medication to pregnant women with chronic pain. The independent variables were perinatal nurses' attitudes, knowledge of pain, and demographics. The dependent variable was the perinatal nurse's intent to medicate a woman with chronic pain who is pregnant. This provided a potential group of approximately 350 perinatal nurses.

All perinatal registered nurses working in labour and delivery, mother baby, neonatal intensive care/ special care nursery, and the prenatal clinics were asked to voluntarily complete a survey to determine attitude, knowledge of pain, and intent to medicate pregnant women with chronic pain. The *Knowledge and Attitudes Survey Regarding Pain* survey developed by Ferrell and McCaffery (2014) was originally developed in 1987.

After obtaining Institutional approval from University of Health Sciences, Lahore and the participating hospitals (See Appendices C and D), the principle investigator requested permission from the unit manager to meet with the registered nurses on the identified nursing units. This allowed for active participant recruitment. Permission was also requested to contact nurses not present at the meeting through the use of approved email. Data collection began in December, 2016 and continued through April 20, 2017. A power analysis was done using the

statistical calculator from AI-Therapy (2016) for a correlation study using a correlation co-efficient of 0.5, with a significance level of 0.05, and a power of 0.95 identified a minimum sample of 50 participants.

The principle investigator recorded all survey results and performed statistical analysis using IBM SPSS Statistics V 23(IBM, Inc., Armonk, NY, USA). A survey return rate of 30% (105/350) was calculated. Descriptive statistics were analysed to describe the participant sample, general participant knowledge of pain, attitudes, and intent to medicate. A one sample *t*- test was computed to determine the impact of education knowledge, attitude, and intent to medicate. Analysis of Variance (ANOVA) were used to determine if there are differences in knowledge, attitude and intent to medicate scores based on nursing unit where employed, level of perinatal care where employed, and level of nursing education. Pearson's correlation was performed to determine if there was any correlation between knowledge of pain, attitude, intent to medicate and demographics.

ANALYSIS: The purpose of this paper was to determine if perinatal nurses' intent to medicate was affected by knowledge of pain or attitude toward pregnant women with chronic pain. Additionally, the project investigates whether demographics such as age, education, experience, nursing unit, or level of perinatal care where employed are related to the perinatal nurse's intent to medicate a pregnant woman with chronic pain. The mean age of respondents was 47. 3 years of age with a median of 51 and a range of24- 69 years (*SD*= 11.81). (See Table 1).Years of nursing experience ranged from 1 – 50 years with a mean of 21.88 years (*SD*=13.49) while experience in a perinatal/maternity unit ranged from less than 1 year to 45 years with a mean of 18.04 years (*SD*=11.64).

Table 1: *Means and Standard Deviations for Age and Experience of Sample*

Variable	*M*	*SD*
Age	47.37 (24-69)	11.81
Years Nursing Experience	21.88 (1-50)	13.49
Years Maternity Experience	18.04 (< 1-45)	11.64

Knowledge, Attitude and Intent to Medicate Scores

The survey instrument contained 33 items which included a combination of true – false and multiple choice questions. Thirty one of the items identified knowledge of pain with 14 of the items also identifying participant attitude toward pain. Two items identified intent to medicate. Each participant survey generated a knowledge score, an attitude score, and intent to medicate score. The results are shown in Table 2. Each item was given a score of "one" for a correct answer, positive attitude, or intent to medicate. A score of "zero" was given to any incorrect answer, negative attitude, or lack of intent to adequately medicate. Higher scores indicate increased knowledge of pain with 31 being the maximum possible score. The mean knowledge score was 22.73 with a range of 15 – 31. Only 25% (*n*=25) of participants achieved a score of 80% or greater on the knowledge items.

Fourteen of the items also identified participant attitude toward pain. The higher the attitude score out of a possible score of 14, the more positive a person's attitude toward the patient. The mean attitude score was 10.39 with a range of 6 -14 (*SD*=1.86). Thirty-one percent of participants demonstrated a positive attitude score of 80% or greater toward pregnant women with chronic pain.

Table 2: *knowledge, Attitude, and Intent to Medicate Scores*

Score	Maximum Possible Score	*M*	*SD*	% Scoring > 80% Correct/ Positive
Knowledge	31	22.73 (15-31))	3.1	25
Attitude	14	10.39 (6-14)	1.9	31

Intent to Medicate	2	0.9 (0-2)	0.9	41

Pearson's Correlation was performed to determine if there was any correlation between intent to medicate and knowledge, attitude, and demographics (see Table 3). Knowledge was positively correlated with attitude (r(100) =0.743, p<0.001) and intent to medicate (r (100) =0.463, p<0.001). Knowledge was not correlated to age, years of nursing experience, or years of experience in maternity. Attitude was positively correlated with knowledge(r (100) =0.743,p<0.001) and intent to medicate(r(100) =0.583, p<0.001). Attitude was negatively correlated with years of nursing experience (r(100) =-0.236, p=0.018). Attitude was not correlated to age, or years of maternity experience. Intent to medicate was positively correlated with knowledge (r(100) = 0.463, p<0.001) and attitude(r(100) =0.583, p<0.001). Intent to medicate was not correlated with age, years of experience in nursing or years of experience in perinatal nursing.

Table 3: *Pearson Correlations among Knowledge, Attitude, and Intent to Medicate Scores and Demographic Variables*

	Age	Years Experience	Maternity Experience	Knowledge Score	Intent to Medicate	Attitude
Age		.878**	.796**	.021	-.123	-.183
Years Experience			.904**	-.09	-.075	-.236*
Maternity Experience				.019	-.079	-.166
Knowledge Score					.463**	.743**
Intent to Medicate						.583**

Note. *Significant correlation at the $p < .05$ level. **Significant correlation at the $p < .01$ level

Correlated with knowledge (r(100) = 0.463,p≤0.001) and attitude (r(100) =0.583,p≤0.001).There is no statistically significant correlation between the demographics of age, experience, or level of perinatal care and the perinatal nurse's intent to medicate. The result of this DNP project confirms that a perinatal nurse's increased knowledge of pain is related to intent to medicate a pregnant woman with chronic pain. It also confirms that a more positive attitude score is related to a perinatal nurse's intent to medicate a pregnant woman with chronic pain.

D**ISCUSSION:** The findings indicate that there is a need for perinatal nurses to be educated about pain based on a mean knowledge score of 22.73. Descriptive statistics reveal that only 25% of the sample answered 80% or more of the knowledge questions correctly (Score > 25 of 31). There was no statistically significant difference in knowledge for any other variable except attitude and intent to medicate. This indicates that increased knowledge of pain is associated with a more positive attitude toward the pregnant woman with chronic pain.

The chronic use of opioids in pregnancy is associated with prematurity, growth restriction, increased morbidity and mortality, and Neonatal Abstinence Syndrome (NAS). Newborns experiencing NAS demonstrate withdrawal with tremors, irritability, high pitched cry, and an inability to be consoled (McQueen, et al., 2015). NICU nurses, as the care givers for these difficult to manage infants, have been shown to have poor to moderate attitudes toward women who use illicit substances during pregnancy (Fonti, Davis, and Ferguson, 2016). This may explain the decreased intent to medicate among NICU nurses.

These findings are limited to the perinatal nurses employed in a single hospital system located in Punjab, Pakistan and may not be able to be extrapolated to other settings or geographic locations. Fifty-four percent of the survey respondents were employed at a regional perinatal center. Fifty-eight percent of the respondents were employed in labor and delivery. The large response of nurses from labor and delivery and the regional perinatal center may have skewed the survey results. Survey participation was voluntary and had a response rate of 30%. The findings may reflect a self-selection bias of the participants. Nurses in the prenatal clinic did not respond to the survey. These nurses provide care to the pregnant woman with chronic pain. This leaves a significant gap in information relevant to the care of a pregnant woman with chronic pain.

This study should be replicated in other settings such as urban hospitals and hospitals located in different geographic regions. This study should be replicated with nurses in the out-patient prenatal setting. Additional research is needed to confirm that an education program regarding pain and treatment of pain will increase perinatal nurses' knowledge of pain, increase attitude scores or increase the perinatal nurses' intent to medicate a pregnant woman with chronic pain.

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